

CLAIMS

1. A driveline for a vehicle incorporating a through-drive axle unit which is a close-coupled assembly comprising:

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a torque transfer mechanism with an associated first differential unit,

said first differential unit having an input for connection to a drive means,

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said first differential unit having a first output and a second output,

said first output being driveably connected to an output shaft for onward drive transmission,

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said second output being driveably connected through an input pinion to an axle differential unit,

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said output shaft and said input pinion being on substantially the same rotational axis.

2. A vehicle driveline as claimed in claim 1 wherein the driveline incorporates an integrated transfer box and through-drive axle unit which is a close-coupled assembly including two torque transfer mechanisms with two associated differential units and an axle differential unit which are driveably interconnected.

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3. A vehicle driveline as claimed in claim 2 wherein said integrated transfer box and through-drive axle unit includes:

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a drive input shaft,

the drive input shaft being driveably connected to a first differential unit,

the first differential unit having a first output and a second output,

the first output being driveably connected to a first output shaft for
onward drive transmission,

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the second output being driveably connected to a second differential
unit having a first output and a second output,

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the second differential unit first output being driveably connected to a
second output shaft for onward drive transmission,

the second differential unit second output being driveably connected to
an axle differential unit having first and second drive outputs for
connection to wheels of a vehicle.

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4. A vehicle driveline as claimed in claim 3 wherein the first output of the second
differential unit is on substantially the same rotational axis as an input pinion to
the axle differential unit.

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5. A vehicle driveline as claimed in claim 3 wherein the second output of the first
differential unit is driveably connected to the second differential unit through a
parallel axis gear pair.

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6. A vehicle driveline as claimed in claim 2 wherein said integrated transfer box
and through-drive axle assembly includes first and second torque transfer
mechanisms with their two associated differential units and an axle differential
unit and is associated with a second axle from the front of the vehicle and
takes its drive input from the vehicle engine via a main change-speed gear
box and a drop-box, and has a first output from the first torque transfer
mechanism towards the rear of the vehicle which drives the rear two axles
through a through-drive axle unit located at a third axle from the front of the
vehicle, and has a second output from the first torque transfer mechanism
towards the front of the vehicle which drives the two front axles through a
second torque transfer mechanism which has one output close-coupled with

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an axle differential unit of the second axle and a second output towards the front of the vehicle connected to a propeller shaft which drives an input shaft of a front axle differential.

- 5 7. A vehicle driveline through drive axle unit including:

 a drive input shaft,

 the drive input shaft being driveably connected to a first differential unit,

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 the first differential unit having a first output and a second output,

 the first output being driveably connected to an output shaft for onward drive transmission,

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 the second output being driveably connected through an input pinion to an axle differential unit having first and second drive outputs for connection to wheels of a vehicle,

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 the output shaft for onward drive transmission being on substantially the same rotational axis as the input pinion to the axle differential unit.

8. An integrated transfer box and through-drive unit for a vehicle driveline, including:

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 a drive input shaft,

 the drive input shaft being driveably connected to a first differential unit,

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 the first differential unit having a first output and a second output,

 the first output being driveably connected to a first output shaft for onward drive transmission,

the second output being driveably connected to a second differential unit having a first output and a second output,

the second differential unit first output being driveably connected to a second output shaft for onward drive transmission,

the second differential unit second output being driveably connected to an axle differential unit having first and second drive outputs for connection to wheels of a vehicle.

9. An integrated transfer box and through-drive unit for a vehicle driveline as claimed in claim 8 wherein the first output of the second differential unit is on substantially the same rotational axis as an input pinion to the axle differential unit.

10. An integrated transfer box and through-drive unit for a vehicle driveline as claimed in claim 8 wherein the second output of the first differential unit is driveably connected to the second differential unit through a parallel axis gear pair.

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